

## X-LDA025A-AE53D12 Datasheet



- 25, 75, 150 mm travel options
- Up to 0.8 m/s speed and up to 4 g acceleration
- High repeatability (200 nm) and accuracy (1  $\mu\text{m}$ ), with 20 nm minimum incremental move
- One digital input and two digital outputs
- Direct position measurement from 1 nm resolution linear encoder
- Non-contact ironless linear motor for high precision, high dynamic performance & zero backlash
- Built-in controller; daisy-chains with other Zaber products
- Technical Article - Linear Motors: Overview and Selection Process

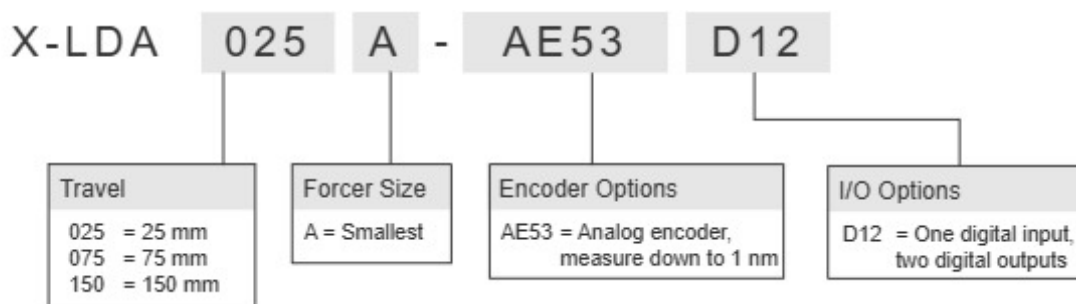
## X-LDA-AE Series Overview

Zaber's X-LDA-AE Series devices are computer-controlled, motorized linear stages delivering high speed, precision, and reliability in a compact package. A centrally mounted linear encoder results in up to 1  $\mu\text{m}$  position accuracy and consistent movement steps down to 20 nm. X-LDA-AE devices feature non-cogging ironless linear motors, providing high speed and acceleration capabilities. Both the drive and encoder are non-contact, and have no moving cables, resulting in an extremely robust system.

X-LDA-AE devices are stand-alone units requiring only a standard 48 V power supply. They connect to the RS-232 port or USB port of any computer, and can be daisy-chained with any other Zaber products. The daisy-chain also shares power, making it possible for multiple X-Series products to share a single power supply. Like all of Zaber's products, the X-LDA-AE Series is designed to be 'plug and play' and very easy to set up and operate. X-LDA-AE devices also include a digital input and two digital outputs for interfacing with external systems. An event-driven trigger system allows devices to be programmed for stand-alone operation based on I/O, time, or movement stimuli.

For more information visit: <https://www.zaber.com/products/linear-stages/X-LDA-AE>

## X-LDA-AE Series Part Numbering & Options



## X-LDA025A-AE53D12 Drawings

- [dimensions\\_X-LDA-AE \(Drawing for the X-LDA-AE\)](#)

## X-LDA025A-AE53D12 Specifications

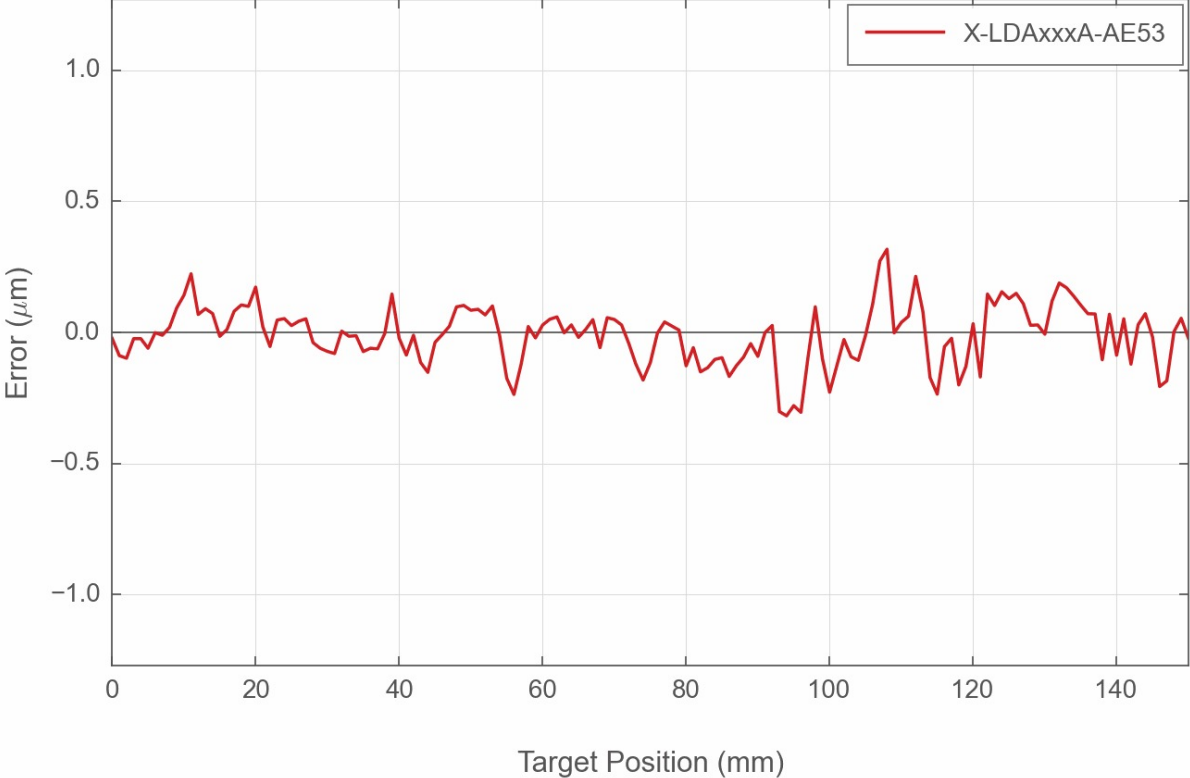
<b>Built-in Controller</b>	
Travel Range	25 mm (0.984")
Accuracy (unidirectional)	1.5 $\mu\text{m}$ (0.000059")
Repeatability	< 0.2 $\mu\text{m}$ (< 0.000008")
Minimum Incremental Move	20 nm
Maximum Acceleration	78.5 m/s <sup>2</sup> (8.00 g)
Maximum Speed	800 mm/s (31.496"/s)
Minimum Speed	0.61 nm/s
Speed Resolution	0.61 nm/s
Encoder Type	Linear analog encoder
Encoder Count Size	1 nm
Peak Thrust	16 N (3.6 lb)
Maximum Continuous Thrust	6 N (1.3 lb)
Communication Interface	RS-232
Communication Protocol	Zaber ASCII (Default)
Data Cable Connection	Locking 4-pin M8
Maximum Centered Load	100 N (22.4 lb)
Maximum Moment (Pitch)	500 N-cm (708.1 oz-in)
Maximum Moment (Roll)	500 N-cm (708.1 oz-in)
Maximum Moment (Yaw)	500 N-cm (708.1 oz-in)
Vertical Runout	< 4 $\mu\text{m}$ (< 0.000157")
Horizontal Runout	< 4 $\mu\text{m}$ (< 0.000157")
Typical Velocity Stability	$\pm$ 0.33% at 100 mm/s with a 1.0 kg payload
Pitch	0.006° (0.105 mrad)
Roll	0.005° (0.087 mrad)
Yaw	0.005° (0.087 mrad)
Stiffness in Pitch	500 N-m/° (35 $\mu\text{rad/N-m}$ )
Stiffness in Roll	500 N-m/° (35 $\mu\text{rad/N-m}$ )

## Built-in Controller

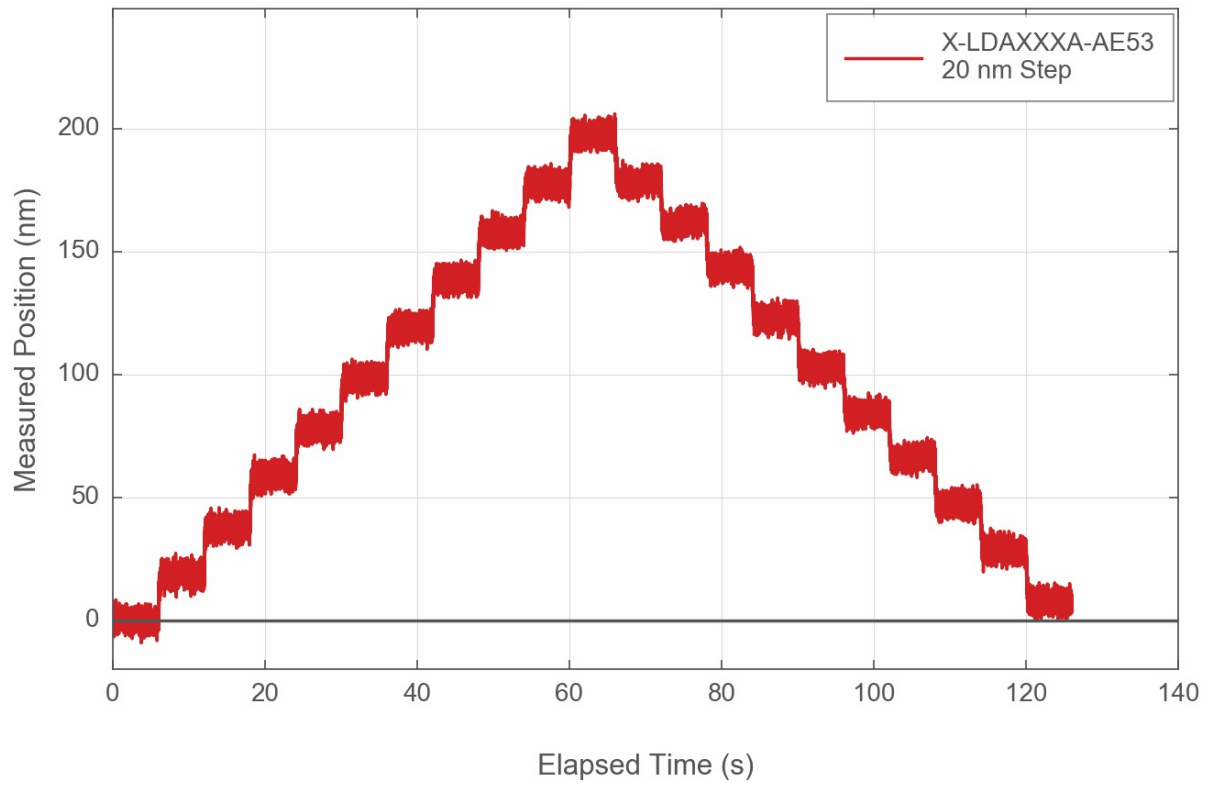
Stiffness in Yaw	400 N-m/° (44 µrad/N-m)
Power Supply	48 VDC
Power Plug	2-pin screw terminal
Maximum Current Draw	3000 mA
Motor Type	Moving Magnet Track Linear Motor
Force Constant	3.7 N/A (0.8 lbs/A)
Guide Type	Crossed-Roller Bearing
Limit or Home Sensing	Optical Index Mark
Manual Control	Indexed knob with push switch
Axes of Motion	1
LED Indicators	Yes
Mounting Interface	M6 threaded holes
Moving Mass	0.29 kg (0.638 lbs)
Digital Input	1
Digital Output	2
Operating Temperature Range	0 to 50 °C
CE Compliant	Yes
Vacuum Compatible	No
Weight	0.91 kg (2.006 lb)

X-LDA-AE Series Charts

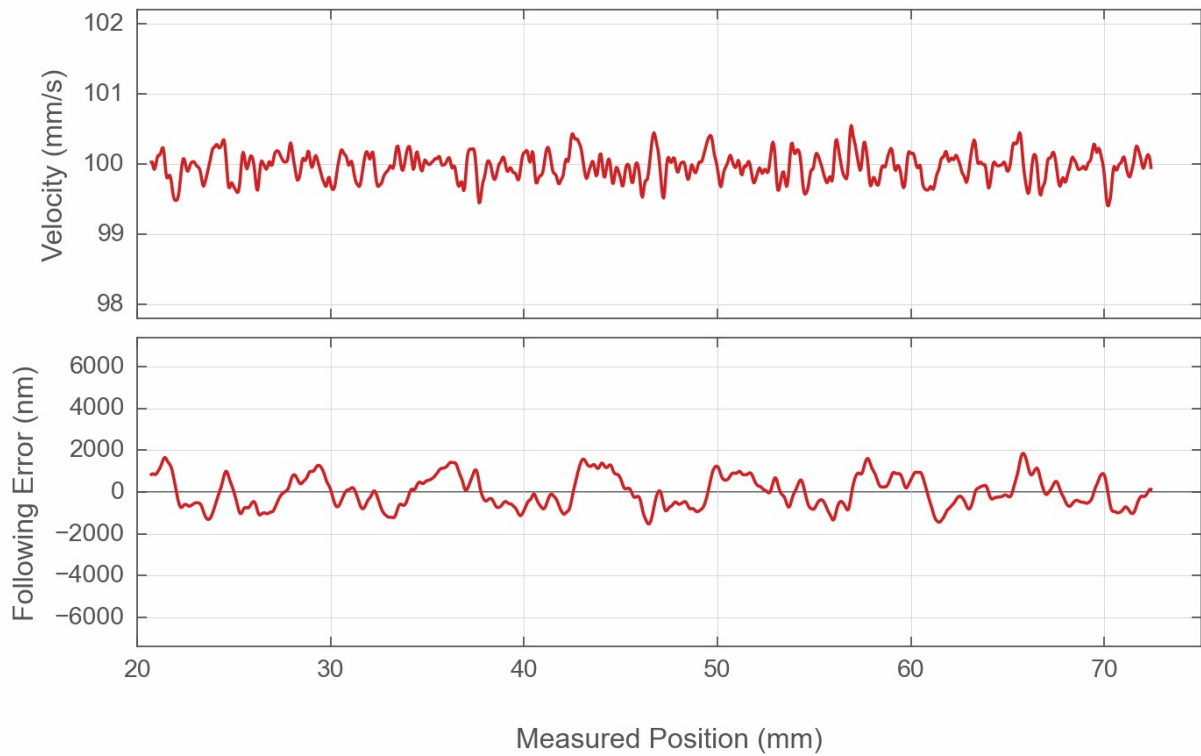
Typical Accuracy



## Typical Minimum Incremental Move



## Velocity Stability and Following Error



## Contact

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